

CHAPTER 5.0

ENVIRONMENTAL CONSEQUENCES

5.1 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION

5.1.1 GEOLOGY, SOILS, AND SEISMICITY

EXCAVATION, GRADING, AND CONSTRUCTION

The SHMA requires the State Geologist to delineate various seismic hazard zones and requires cities, counties, and other local permitting agencies to regulate certain development projects within these zones. Before project approval is granted for a site within a seismic hazard zone, a geotechnical investigation must be conducted and appropriate mitigation measures incorporated into the project design. The CGS Special Publication 117, adopted in 1997 by the State Mining and Geology Board in accordance with the SHMA, constitutes guidelines for evaluating seismic hazards other than surface faulting, and for recommending mitigation measures as required by Public Resources Code Section 2695(a). LBNL is required to comply with the guidelines set by CGS Special Publication 117. Compliance with the requirements of SHMA would reduce the risk of injury and property damage resulting from potential earthquake-induced landslide hazards to a less than significant level.

The design criteria for the Proposed Action would comply with requirements of the 1998 California Building Code, LBNL's Facilities Department Project & Design Management Procedures Manual "Lateral Force Design Criteria," and federal standards. In addition, the seismic design of the project would comply with the latest UC seismic safety policies. The design would exceed the requirements of the California Building Code (CCR Title 24) and comply with the more stringent local building code (LBNL Standard RD 3.22). As part of the Proposed Action, a Conceptual Design Report was prepared that accounts for all loads to which the structure may be subjected, including dead, live, wind, and seismic, and that incorporates recommendations provided in the preliminary geotechnical report prepared for the project site to reduce ground-shaking hazards.

An engineering analysis report and drawings, and relevant grading or construction activities on the project site would be required to address constraints and incorporate recommendations identified in the geotechnical investigations. Considering that the Proposed Action would be constructed in conformance with the California Building Code, LBNL requirements, and federal regulations and guidelines, the risks of injury and structural damage from groundshaking would be reduced and the impacts would be less than significant.

The Proposed Action would require excavation of approximately 32,000 cubic yards of soil to construct the Molecular Foundry building, the Central Utility Plant building, and otherwise to prepare the site for roads and walkways. This fill material would not leave the site, but would be used as engineered fill to construct the new Lee Road extension, along the western perimeter of the Molecular Foundry buildings, and the widening of Lee Road, southwest of Building 62.

During excavation, topsoil would first be stripped and stockpiled for dressing finished slopes and for use in landscaped areas in all areas where excavations are to be made or fill deposited, and edges of cut banks would be rounded to blend into the natural terrain. A site and project-specific erosion control plan would be included as part of the project design process and implemented as a condition for approval. This plan would include measures listed in Appendix “A,” including development of a project/site-specific SWPPP. The SWPPP would include, as feasible, the covering of excavated materials, installation of silt traps, fencing, and use of filter fabric as measures to control erosion and sedimentation as required by the California general permit for storm water associated with construction activities. Landscaping would be begun as soon as surface disturbances were finished for each relevant area. Potential soil erosion and topsoil impacts would be less than significant.

Geotechnical borings installed at the project site identified portions of on-site soils as being highly expansive, and provided recommendations to address these hazards. The report describes the site as being underlain by a combination of compacted material used on the site for landslide repair, landslide debris, and colluvial soil (Kleinfelder, January 29, 2002). The report specifically states: “Because some of the on-site soil has a high expansion potential, the geotechnical engineer should approve soil prior to its use as fill material. Fill should be moisture conditioned and compacted to at least 90 percent relative compaction using ASTM D-1557 test procedure.” The report also recommends that the soil at subgrade level be evaluated during site excavation to determine its expansion characteristics, and if found to be expansive, this soil should be excavated and replaced with low-expansion materials. These geotechnical recommendations have been incorporated into the Proposed Action Conceptual Design Report. Any potential impacts due to expansive soils would be less than significant with the inclusion of these project features.

OPERATIONS

The Proposed Action design would incorporate foundation recommendations of the project geotechnical evaluation so as to be constructed to applicable California Building Code and LBNL standards. In addition, the Proposed Action would adhere to, where appropriate, guidelines of the CGS Special Publications 117; and incorporate standard LBNL practices (see Appendix “A”), to address any potential liquefaction hazards.

5.1.2 HYDROLOGY AND WATER QUALITY

EXCAVATION, GRADING, AND CONSTRUCTION

Construction-related grading and other activities would be required to comply with the Association of Bay Area Governments' Manual of Standards for Erosion and Sediment Control Measures, and with the State of California's Best Management Practices for Construction Activity Handbook. The site would require a National Pollutant Discharge Elimination System (NPDES) general permit for stormwater associated with construction activity, which includes a project-specific SWPPP. A site and project-specific erosion control plan would be included and implemented during construction to reduce short-term water quality impacts associated with construction. Best Management Practices addressed in this plan would include covering of excavated materials, installation of silt traps, fencing, use of filter fabric, prohibition of cement truck washout to LBNL drains and surfaces, stabilized construction entrances, etc., and oversight throughout construction by LBNL engineers and EH&S specialists. In addition, the plan would require disturbed areas to be landscaped and re-seeded at the earliest practical time during construction so that ground cover would be well-established by the next rainy season.

During construction, measures would be implemented to provide controlled diversion of storm water until the permanent system is intact. Temporary silt traps, sedimentation ponds, and/or diversion structures would be designed and implemented to minimize erosion and siltation during construction. Because portions of the construction work would occur during the rainy season, careful consideration would be given to the sequencing of the construction work in the subcontract construction documents to minimize potential erosion. Provisions would be made to control storm runoff in disturbed areas including pumping, controlled channeling of water, and placement of silt traps to minimize erosion and siltation and maintain slope stability. This would be expanded in the construction specifications that the Architect/Engineering subcontractor develops in coordination with LBNL.

Landscaping would begin as soon as surface disturbances are completed for each relevant area. Most landscaping would take place following completion of earth-moving activities. The construction/grading contractor would hydro-seed the north end of the site during the fall of 2004 so as to minimize the erosion control measures required, but the actual timetable would not be firmly established until a contractor has been retained and a detailed construction plan is developed.

It is anticipated that some dewatering may be necessary during project excavation and construction. Excavation for the site may intersect bedrock containing fracture flow thereby causing surface seeps within the excavation. This is expected to be a temporary condition during construction that would be managed by temporary dewatering systems. If a groundwater seepage condition were to occur, and management of this condition were to become necessary, the Proposed Action could require a subdrain system or other engineered solution to reduce groundwater levels around the building. This, however, would not constitute significant alteration or depletion of a valuable or beneficial groundwater resource.

If dewatering is necessary during excavation and construction, the groundwater seepage would not be expected to contain any chemicals of special concern given the results of sampling conducted in January 2002. Such water, were it encountered, could therefore be discharged to storm drains.

As discussed above, potential on-site erosion associated with construction operations would be minimized to a less than significant level by a site and project-specific erosion control plan that would be included as a part of the project design and would be implemented as a condition of approval for construction.

OPERATIONS

The Proposed Action would not use water supplied from groundwater sources at the site, but from the East Bay Municipal Utility District supply system. Therefore, the Proposed Action would not need to pump groundwater and would not contribute to the depletion of an established groundwater resource.

As part of the Proposed Action, surface water runoff would be re-routed into the LBNL storm drain system and conveyed to an existing detention basin near Centennial Drive in Strawberry Creek that subsequently discharges water further downstream. Storm water generated within the LBNL facility is currently managed in conformance with LBNL's NPDES General Permit for Storm Water Discharges Associated with Industrial Activity, as required by the Clean Water Act and the State Water Resources Control Board. Oversight and enforcement of this permit is provided by the San Francisco Bay Regional Water Quality Control Board. Implementation of the permit requirements is detailed in LBNL's SWPPP and Storm Water Monitoring Plan (SWMP). Since the Proposed Action would be required to comply with LBNL's existing SWPPP and NPDES permit requirements, potential impacts associated with violation of water quality standards from future project site storm water runoff is anticipated to be less than significant.

The project site does not lie within the 100-year flood plain as determined by the Federal Emergency Management Agency (FEMA) flood hazard mapping, and would not include the construction of housing. There are no impounded water bodies upstream from the project site, and therefore flooding associated with failure of a dam or inundation by seiche is not anticipated to affect the Proposed Action. As the Proposed Action site is located approximately 700 feet above mean sea level, potential inundation by tsunami is extremely remote.

5.1.3 BIOLOGICAL RESOURCES

SPECIAL STATUS WILDLIFE

The project site is close to designated critical habitat for the Alameda whipsnake (it is approximately 500 feet north of the nearest critical habitat boundary). After it conducted site visits during the summer of 2000, the U.S. Fish and Wildlife Service (USFWS) determined that the future Proposed Action site and surrounding areas, along with certain other LBNL areas, should be excluded from its final critical habitat listing (U.S. Fish and Wildlife Service, 2000).

Since the Proposed Action site was excluded from the final listing by the USFWS, it is not considered to be critical habitat of the Alameda whipsnake. The closest shrub community to the proposed site is an area of north coastal scrub approximately 1500 feet to the east and separated from it by roads and other development within the LBNL (McGinniss 1996). Alameda whipsnakes can be found well away from shrub communities. However, the habitat value of grasslands on the site is attenuated by the distance from the shrub area, the potential dispersal barrier produced by existing development, and the lack of rock outcrops both on the site and in the surrounding area. On-site grassland habitat value is further reduced by annual vegetation management for fuel reduction purposes, which includes reduction of grass and shrub heights, either with goats or by mechanical means, and removal of non-native trees within 100 feet of existing buildings. Such reduction of vegetative cover further reduces the possibility that whipsnakes would use the area as a dispersal corridor.

Although the site is not located in USFWS-designated critical habitat, due to the potential for Alameda whipsnake movement into the project area, mitigation measures would be prudent to ensure that whipsnakes are protected to the greatest extent possible during project construction. The mitigation measures presented below include avoidance measures developed in informal consultation with USFWS during site surveys for the water tank and fire road realignment components of a previous LBNL project: the Sitewide Water Distribution Upgrade project. The incorporation of these avoidance measures into that project resulted in an informal determination by the USFWS that LBNL's Sitewide Water Distribution Upgrade project would not be likely to adversely affect the Alameda whipsnake or its critical habitat (USFWS 2001; LBNL NEPA/CEQA Program 2001; J. Philliber, pers. com. 2002).

- Prior to the initiation of excavation, construction, or vehicle operation, the project area shall be surveyed by a designated monitor, trained in Alameda whipsnake identification and ecology by a qualified biologist, to ensure that no Alameda whipsnakes are present. This survey shall not be intended to be a protocol-level survey, but rather one designed to verify that no snakes are actually on site.
- All on-site workers shall attend an Alameda whipsnake information session conducted by the designated monitor. This session shall cover identification of the species and procedures to be followed if an individual is found on site.
- All lay-down and deposition areas shall be inspected each morning by a designated monitor to ensure that Alameda whipsnakes are not present. All construction activities that take place on the ground shall be performed in daylight hours. Vehicle speed on site shall not exceed 15 miles per hour. Construction materials, soil, construction debris, or other material shall be deposited only on areas where vegetation has been mowed and any snakes present would be readily visible.
- The site is subject to annual vegetation management involving the close-cropping of all grasses and ground cover on the project area; this management shall be done prior to initiation of construction. Re-mowing shall be done if grass or other vegetation on the project site becomes high enough to conceal whipsnakes during the construction period.

A number of protected butterfly species also potentially occur in the project area. However, since the site is dominated by non-native grassland, with no larval host plants present, suitable habitat does not exist on site for the Bay checkerspot butterfly (*Euphydryas editha bayensis*; federally listed as threatened) or the Callipe silverspot butterfly (*Speyeria callippe callippe*; federally listed as endangered). The monarch butterfly (*Danaus plexippus*; a state special status species) roosts in eucalyptus groves; no suitable groves are on or near the site.

The site lies upslope from the Chicken Creek and Strawberry Creek drainages, and it is possible that the California red-legged frog (*Rana aurora draytonii*; federally listed as threatened and a state species of special concern), the western pond turtle (*Clemmys marmorata*, a state species of special concern), and the foothill yellow-legged frog (*Rana boylei*, a state species of special concern) might be present in the general area of the project site. However, the site itself does not provide suitable habitat for these species, and it is unlikely that they would migrate through it, since the site is not located between creek drainages and other suitable habitat. Another amphibian, the California tiger salamander (*Ambystoma californiense*, a state species of special concern) requires seasonal pools for breeding, and the site and its surroundings do not provide suitable habitat. The Berkeley kangaroo rat (*Dipodomys heermanni berkeleyensis*, a state special status species) is apparently extinct, and in any event the site provides no habitat since the density of the grassland vegetation is greater than is generally suitable for kangaroo rats.

The project site potentially provides a small amount of foraging habitat for golden eagles (*Aquila chrysaetos*, a state species of special concern) and for the white-tailed kite (*Elanus leucurus*, a state special status species). Although the amount of existing development and activity proposed in the area of the site would lower its value as foraging habitat, the site is relatively small. Consequently, no significant adverse impacts to these species are expected.

SPECIAL STATUS PLANTS

A thorough review and analysis of special status plant species, listed by the CNDDB (2002) and CNPS (2002) databases, as occurring in the Oakland East, Oakland West, Richmond, and Briones Valley USGS 7.5 minute quadrangles, indicates the likelihood of adverse project impacts for most of the species listed is extremely low due to the following reasons:

- suitable habitat for a species either never existed on the site or no longer does due to historical and ongoing disturbance of soils and vegetation;
- a species is not documented within the general vicinity of the project site, i.e., the western side of the Oakland-Berkeley Hills;
- only historical occurrences for a species are documented;
- a species has been extirpated from the quadrangle or county.

There are two special status plants listed in the databases as occurring further downslope from the project site in Strawberry Canyon. The first of these, western leatherwood (*Dirca occidentalis*) was not observed by ESA within the project footprint. This shrub occurs almost exclusively on

north-facing slopes, as an element of coastal scrub or oak woodland communities. The second, robust monardella (*Monardella villosa* ssp. *globosa*), is documented historically from the area. However, this species is generally found in chaparral and no suitable habitat remains within or near the project footprint.

The CNDDB (2002) lists several sensitive natural communities as occurring in the USGS quadrangles searched, including northern maritime chaparral, serpentine bunchgrass, and valley needlegrass grassland. However, none of these communities occur on or in the vicinity of the project site.

Additional runoff generated by the new building would be routed into existing storm drains. Although the Proposed Action is located within 500 feet of Chicken Creek, there would be no adverse effects on the creek or the riparian habitat lining its banks, nor would the Proposed Action result in any significant impacts to the riparian corridor along Strawberry Creek. Standard erosion control measures would be used to ensure that sediment generated by construction would not enter the creeks (see analysis, *Hydrology and Water Quality*).

Therefore, the Proposed Action is not expected to have a substantial adverse effect on any of the special status plant species or natural communities of federal, state, and local concern.

With the inclusion of mitigation measures incorporated as part of this Proposed Action, the Proposed Action would have a less than significant impact on biological resources.

5.1.4 HISTORIC AND ARCHAEOLOGICAL RESOURCES

EXCAVATION, GRADING, AND CONSTRUCTION

Although, according to the 1987 SEIR and a more recent survey conducted in 1999, there are no known paleontological resources in the vicinity of the project site, excavation, grading, and construction activities may create an adverse effect on any unknown archaeological and paleontological resources found on the site.

In the unlikely event of the discovery of archaeological and paleontological artifacts during construction, all activities within a 50-foot radius would be halted and a qualified archaeological/paleontological monitor would inspect the site within 24 hours. If the find is determined to be significant and merits formal recording or data collection, time and funding would be required to salvage the material. Any archaeologically important data recovered during monitoring would be cleaned, catalogued and analyzed, with the results presented in a report of finding that satisfies professional standards.

Since the Proposed Action is unlikely to contain any archaeological and paleontological resources, it would also be unlikely to encounter human remains in the vicinity of the project site. If human remains should be encountered during construction, work would be halted and procedures described above would be implemented.

OPERATIONS

With the implementation of the above-described mitigation measure during the construction phase of development, it is anticipated that the operations of the proposed Molecular Foundry complex would not have a significant impact on historic and archaeological resources.

5.1.5 VISUAL QUALITY

EXCAVATION, GRADING, AND CONSTRUCTION

Excavation, grading, and construction activities would create a short-term adverse effect on the visual quality of the site and surroundings. These activities would occur during a 6-month time period and would require the removal and fill of about 32,000 cubic yards of soil.

The aesthetic environment during that time would incorporate elements typical to a construction site such as bulldozers, trucks, loaders, and excavators, as well as disturbed hillside land and surfaces.

Severe angular cuts and/or filling which results in an unnatural or engineered appearance would be avoided where feasible. In addition, graded slopes would be feathered and rounded where feasible to provide a natural transition between the graded site and adjacent ungraded areas. Furthermore, grading would be minimized though the use of retaining walls where compatible with proper design.

The Proposed Action would require removal of approximately three dozen trees to accommodate building footprints, roads, grading and construction activities. Trees proposed for removal include Monterey pine, coastal redwood, coast live oak, and bay. The majority of the trees would be removed from the area adjacent to the western and southern faces of Building 72. Fewer than one dozen trees to be removed are downslope from the Building 66 rear parking lot. These trees occur in generally isolated patches. Much larger groves consisting of up to several hundred trees each in the general vicinity would remain untouched by the Proposed Action, including a large screening grove of Canary Island pines to the west, a grove of screening redwoods to the southwest, a riparian corridor of various trees to the west and southwest, and several contiguous groves of oak, bay, acacia, and eucalyptus trees stretching from south of the project to the northeast.

The Proposed Action would transplant up to ten redwood or similarly sized trees along the western perimeter of Lee Road to provide screening for the Proposed Action. Trees would be positioned to maximize screening values. In addition, replacement trees would be planted or transplanted in various locations in and surrounding the project site, particularly in the area between the Lee Road extension and the proposed Central Utility Plant building, which would receive about one-dozen trees. All trees placed by the Proposed Action would be irrigated as necessary. Because the principal screening values and visual character of project-removed trees would be replaced, tree removal for this project would not cause a significant impact.

The Proposed Action would not have a significant adverse effect on the visual quality of the site and surroundings during excavation, grading, and construction activities.

OPERATIONS

With implementation of the Proposed Action, long-range views towards the Bay from a short segment of Lawrence Road adjacent to the site would be blocked, although numerous existing vantage points and view corridors within a quarter mile of the site would remain unaltered by the Proposed Action. In addition, the Proposed Action would alter views of the mostly vacant site from nearby areas, including the hillside residential areas along Grizzly Peak and Panoramic Hill, as well as from the adjacent UC Berkeley campus.

Although many trees would be removed, the East Strawberry Canyon perimeter “buffer zone,” consisting of existing and proposed plantings of tall, indigenous tree stands would be maintained to act as a visual buffer between LBNL development and adjacent uses including the UC Berkeley campus, nearby hillside residential areas, Lawrence Hall of Science, and UC Botanical Garden. This would be in keeping with the visual buffer and landscaping directives of the 1987 LRDP. Furthermore, landscape planting areas within and adjacent to the site would be established to “unify the site visually, to relate the site to adjacent vegetation of the Berkeley Hills, and to provide compatibility between buildings and adjacent properties” (1987 LRDP, p.16). The conceptual landscaping plan for the project site consists of three zones: a crafted zone to be located to the south, natural zones to the west and east, and a parking zone to the north. The crafted zone would include an elevated terrace space between Building 66 and the Proposed Action, and would incorporate both hard and soft landscaping elements to connect and unify the building uses. The natural zone includes fire-resistant ground cover for erosion control, as well as decorative plant materials that would be selected based on their indigenous, water-saving, and low-maintenance characteristics. Finally, the parking zone would be located atop the utilities building to minimize the area’s footprint and any potential disturbance to the existing natural environment.

As the proposed development would be located between existing buildings of comparable height and massing, and vegetative screening would be incorporated, the change in landscape would not be discernible at a detailed local level, but rather the change would appear as a general increase in development of the LBNL site. The Proposed Action would therefore not have a substantial adverse effect on a scenic vista.

The Proposed Action would result in a visual change to the project site because it would entail the construction of a six-story building (four stories cantilevered atop two basement levels) on a mostly undeveloped portion of the hillside site. Associated roof-top parking would be provided at a proposed nearby, below-grade utilities building. The Proposed Action would be located in an area that is developed with existing science research buildings and associated uses of similar massing and height, and would incorporate buffer zone landscaping, as described above, around the perimeter of the project site for screening purposes. Natural landscaping details include fire-resistant ground cover for erosion control, as well as decorative plant materials that blend with the surrounding wooded hillside. Furthermore, the Proposed Action would implement existing design guidelines, as described in the 1987 LRDP, and would undergo design review by LBNL architects and engineers prior to construction to ensure project conformance with the guidelines. The proposed building would incorporate architectural details that are similar to or that

complement adjacent development; the building exterior materials would incorporate a non-reflective material to minimize glare and exterior maintenance, and the roof would consist of a single-sheet, co-polymer roofing membrane system with heat-reflective coating to reduce solar gain. Metallic screens would be located on the roof to conceal rooftop mechanical exhaust equipment. The current LRDP designates the project site as a “proposed addition,” and anticipated that a laboratory building would be constructed there. As the Proposed Action would conform to the current LRDP land use designation, and would incorporate site-sensitive landscaping and design principles into project design, the Proposed Action would not substantially degrade the existing visual quality of the site and its surroundings beyond what was anticipated and analyzed in the LRDP EIR, as amended.

The Proposed Action would be located in a hillside area of the LBNL site that includes several other LBNL buildings that provide existing sources of light and glare, including the adjacent Buildings 72 and 66. The site is also located along local roadways, including Lawrence Road and Lee Road, where street lighting projects light and glare during evening hours. The Proposed Action includes an open-surface parking area atop a proposed, below-grade utilities building and anticipates outdoor lighting for operation purposes. In addition, the Proposed Action would include some fixed exterior lighting, particularly at building entrance points and at the surface parking area, to promote worker safety. The Proposed Action would include a detailed exterior lighting plan that would be reviewed by LBNL’s architects and engineers prior to construction. Furthermore, the Proposed Action would be required to utilize non-reflective exterior materials, would adhere to a foot-candle maximum level at night, and would install light caps on all outdoor fixtures to minimize potential light and glare spillover impacts. As these actions would ensure compatibility with surrounding land uses, the Proposed Action would not result in a significant new source of light or glare.

The Proposed Action would therefore not have a significant impact on the visual quality of the site, or the visual quality of areas in the vicinity of the site.

5.1.6 TRAFFIC AND CIRCULATION

EXCAVATION, GRADING, AND CONSTRUCTION

The approximately 24-month construction phase of the Proposed Action would result in temporary increases in traffic volumes on area roadways. This temporary increase is associated with the movement of construction workers and equipment used for excavation and construction of the proposed building and the new roadway extension. Construction-related traffic would cause a temporary and intermittent lessening of the capacities of project area streets because of the slower movements and larger turning radii of construction trucks compared to passenger vehicles. Because construction-generated trips are expected to be spread more or less evenly throughout a construction workday, impacts on peak-hour traffic likely would be limited. In addition, LBNL expects to use materials excavated for the building to construct the new roadway extension. Contractors would implement standard Best Management Practices in order to mitigate any short-term construction-related transportation impacts. Generally, these practices

include implementation of a traffic control plan, such as measures (e.g., advance warning signs, flaggers to direct traffic, and advance notification of interested parties about the location, timing, and duration of construction activity) to maintain safe and efficient traffic flow during the construction period. The effect on traffic conditions would be less than significant.

OPERATIONS

Net new trip generation was estimated based on proposed maximum staff levels and expected work hours (by category of worker), as well as commute travel mode splits, trip distribution pattern, and data pertaining to non-commute trips from data gathered for the LBNL LRDP EIR analysis. As described above, the LBNL shuttle system provides frequent service between downtown Berkeley and the LBNL site, as well as service within the LBNL site, which includes a shuttle bus stop in front of the project site. Given the nature of the work that would be conducted in the proposed building, the scientists (staff and visiting) would generally work irregular hours. For example, on some days, a scientist might work hours analogous to 8:00 a.m. to 5:00 p.m. work days typical of office workers, but on other days that same scientist might work 10:00 a.m. to 7:00 p.m., or might work on a Saturday instead of one of the weekdays. The irregularity of work hours would result in varied peak-hour trips from day to day. Nevertheless, the estimate of project-generated new vehicle trips is based on conservative assumptions so as to not understate potential impacts associated with the Proposed Action.

Two scenarios were prepared – one based on observed temporal distribution of peak-hour commute trips exhibited by similar categories of workers at Buildings 62, 66, 72, 74, and 84, located in proximity to the project site, and the other based on a reasonably higher (conservative) temporal distribution of those trips. The latter scenario yields about 50 percent higher peak-hour vehicle trips than the first scenario. The Proposed Action would generate up to about 30 to 35 net new vehicle trips during the morning and evening peak hours. About half of those trips would pass through the main (Blackberry Canyon) gate; the remaining trips would use the Strawberry Canyon gate, split between Grizzly Peak Road / Centennial Drive and Stadium Rim Way / Centennial Drive.

Under future (2020) conditions, traffic volumes would increase on area roadways, and at study intersections, due to development foreseen by LBNL under its revised LRDP, by the cities of Berkeley and Oakland, and by UC Berkeley. Recent (2001) estimates of increases in roadway and intersection traffic volumes were presented in the University of California at Berkeley's *Northeast Quadrant Science and Safety (NEQSS) Projects* EIR and the City of Berkeley's *General Plan Update EIR*. The study intersections would continue to operate at acceptable levels of service (LOS D or better) during the a.m. and p.m. peak hours, except at the Gayley Road / Stadium Rim Way intersection, where delays within LOS F would increase. As described above, new traffic generated by the Proposed Action would be modest and would be dispersed among roads accessing the entrance gates, and therefore levels of service at the key (gateway) intersections would not change with the addition of project traffic. The contribution of project-generated traffic to LOS F conditions at Gayley/Stadium Rim would be less than significant (i.e., the increase in average vehicle delay caused by the addition of project traffic at the latter

intersection would be less than two seconds during both peak hours).⁹ The operation of the Proposed Action therefore would have a less than significant impact on traffic conditions on the area roadway system.

The Proposed Action would neither alter the physical configuration of the existing roadway network serving the area, nor introduce unsafe design features or incompatible uses into the area. The physical and traffic characteristics of area roadways (e.g., traffic signal and stop-sign control, pedestrian crosswalks and crossing signals, and bicycle lanes) would safely accommodate project-generated traffic (both vehicular and non-motorized). The project's effect on safety would be less than significant.

The proposed system of access and egress for the parking area serving the proposed building would adequately accommodate the mix of users, and there would be less than significant impacts associated with project access.

The Proposed Action would displace 18 existing spaces in a surface lot, and provide 16 new spaces on the upper level of the Central Utility Plant / parking facility). The estimated project-generated parking demand would be accommodated through a combination of the 16-space on-site parking supply and the other on-site parking spaces connected to the project building by the LBNL shuttle bus. Because there would be no spillover of parking demand from the project site into adjacent neighborhoods, any parking impact would be internal to the LBNL site, and therefore, the Proposed Action would have a less than significant parking impact.

The Proposed Action would result in a less than significant impact on traffic, circulation, and parking at the project site and in the vicinity.

5.1.7 AIR QUALITY

EXCAVATION, GRADING, AND CONSTRUCTION

The proposed Molecular Foundry buildings and roadway segment would be constructed on a site created by cutting and filling about 32,000 cubic yards of earth and rock. All excavated material would be used on-site, and there would be no trucking of material off-site (balanced cut and fill). Grading would occur from about April to September 2004. Equipment would be standard diesel-powered loaders, excavators, bulldozers, and trucks. No blasting would occur. Any building foundation would be drilled rather than driven. Utility relocation, including trenching, would occur from about February 2004 to February 2006.

⁹ Revised traffic volumes projections will be prepared as part of the LBNL LRDP EIR. It should be noted, however, that if the later projections indicate that 2020 volumes will be higher than the volumes presented in the UC Berkeley and City of Berkeley EIRs cited herein, that will mean that the percent contribution to 2020 conditions from the Molecular Foundry project would be smaller than presented in the EA/IS, and therefore the less than significant determination would remain valid.

Trucks would arrive on-site delivering building materials and concrete for foundations. Building construction might involve compressors, pneumatic equipment such as drills and nut drivers, cranes, forklifts, and other equipment. A rotary drill rig, likely powered by diesel engines, would bore holes for pilings as part of the foundation.

Construction activities associated with the Proposed Action would create PM-10 and ozone precursor emissions. However, there are no published construction emission thresholds, and the BAAQMD has accounted for construction emissions in its Clean Air Plan. Implementation of standard LBNL construction practices (see Appendix “A”) would reduce the impact of construction-related fugitive dust emissions to a less than significant impact.

OPERATIONS

Project operation would result in emissions primarily from the increase in motor vehicle trips to the site and, to a lesser extent, from other area and on-site stationary sources (such as natural gas combustion for space and water heating, and landscaping). The Proposed Action would create increased electric energy demand from air conditioning and heating equipment. Electricity demand requires more fossil fuel combustion at regional power plants. This would not affect the immediate area but would add incrementally but not measurably to the regional pollutant burden of ozone precursors, particularly oxides of nitrogen. A new diesel emergency generator and an associated 3,000-gallon above-ground fuel tank are proposed as part of the Proposed Action. Emissions associated with this generator would be accounted for and limited by the Permit to Operate that would be required from the BAAQMD. BAAQMD would perform a risk assessment on air emissions from this generator as part of reviewing the permit application to ensure that impacts do not exceed District significance thresholds.

Mobile source emissions would include emissions from trucks and delivery vehicles, and employee commute trips. Approximately 137 new employees and students would use the Molecular Foundry, approximately 95 of whom would be potential new “drivers” to the site.¹⁰ LBNL offers carpooling privileges and shuttle bus services to its employees to reduce driving of personal vehicles. The BAAQMD considers emissions from projects generating fewer than 2,000 trips per day to be less than significant, since this number of trips is not likely to exceed the 80 pounds per day significance threshold established by the District for ROG, NO_x, and PM-10. The Proposed Action would generate well below 1,000 trips per day, and is estimated to result in far less than the 80 pounds per day significance threshold established by the BAAQMD.

Project-related emissions would not be expected to conflict with or obstruct implementation of any applicable state or Federal air quality plans, including the Ozone Attainment Plan, the Bay Area 2000 Clean Air Plan, and the Carbon Monoxide Maintenance Plan. In addition, the Proposed Action would not violate any applicable air quality standard or contribute substantially to any existing or projected air quality violations. Furthermore, it would not result in a

¹⁰Out of 137 Molecular Foundry occupants, 6 would be “directors” currently on staff at LBNL whose current positions would not be replaced; approximately 36 would be UC Berkeley graduate students who would not have driving privileges at LBNL. This would leave about 95 new potential drivers among the Molecular Foundry staff.

cumulatively considerable net increase of ozone and its precursors (i.e., ROG and oxides of Nitrogen), or PM-10.

HAZARDOUS AND TOXIC AIR EMISSIONS

The proposed laboratory would use many types of chemicals, most of which would be kept and used on-site in small quantities. The Laboratory has written procedures to guide personnel in specific methods of storing these chemicals in correct containers and safety cabinets. Individual laboratories would contain fume hoods—for a combined building total of 48 fume hoods—which would be vented to the outside atmosphere at the building rooftop. Discharge from the fume exhaust would meet vertical velocity and stack height requirements. LBNL requires construction of building ventilation systems to minimize criteria air pollutants. Wind analysis would be conducted during project design to ensure that placement of exhaust stacks on the roof would not cause re-entrainment of exhaust into fresh air intake ducts, which would be located on or near the rooftop of the Molecular Foundry building. A Preliminary Hazard Analysis Report is under preparation for the Proposed Action by LBNL and will be completed at the time of final project design.

Two BAAQMD programs evaluate the health risks associated with routine TAC emissions from any activity. First, and most applicable to the Molecular Foundry, BAAQMD's permitting program identifies activities that would exceed risk-based TAC emission thresholds from new or modified sources. The need for an operating permit for laboratory activities would be assessed from more reliable emissions estimates made closer to actual construction of the facility, although it is expected that the Molecular Foundry would qualify for BAAQMD's permit exemption for research laboratories, like the other research activities found at LBNL. The purpose of this permitting process is to ensure that proposed emissions are less-than-significant, and the BAAQMD would impose project conditions, if necessary, to reduce projected emissions until they conform to District significance standards before issuing a permit. Second, BAAQMD's Air Toxics Hot Spots Program updates a facility-wide TAC emissions inventory once each year during the renewal of operating permits. To date, LBNL TAC emissions fall below the thresholds for incorporation into the BAAQMD Toxic Inventory Database.

The Molecular Foundry laboratories would contain small amounts of chemicals similar to those found in other LBNL scientific facilities. These types of chemicals are those typically used in hospitals and medical and research laboratories and pose little environmental risk when used in typical research quantities following accepted research procedures. The completed Hazard Analysis Report will identify in detail the toxic metals that would be used and stored in each laboratory, and the associated types of experiments that would be conducted. These include organic solvents and toxic metals, such as cadmium and arsenic. Chemicals used in laboratories would generally be handled in very small quantities (i.e., probably on the order of up to a few hundred grams) and liquids would tend to be handled in quantities of a few centiliters or less. This is consistent with the nature of the experiments that deal with substances and properties on a micro- and nanoscale. Any quantifiable air quality public health risk from laboratory activities

would be extremely small and well below significance thresholds.¹¹ In addition, the proposed Molecular Foundry project does not include the use of radioactive materials.

The Proposed Action would not create or substantially contribute to a significant TAC impact. Emissions of TACs are regulated by their projected risk to any individual located outside the LBNL property, regardless of the land use designation (e.g., commercial). The risk from TAC emissions is expected to remain below these BAAQMD thresholds. The buffer areas and University lands that surround LBNL further lower the risk levels at the nearest residential areas, which are approximately one-third mile distance. At that distance, operational TAC emissions from the Proposed Action are expected to be extremely small or immeasurable. According to the BAAQMD, a Proposed Action is expected to have a less-than-significant cumulative TAC impact if it does not pose an individually significant TAC impact and is consistent with the governing general plan. That general plan should provide for appropriate buffer zones to protect sensitive receptors from TAC emissions. The LBNL LRDP does maintain appropriate designated buffer areas between the proposed Molecular Foundry site and the nearest residential areas. The Proposed Action therefore meets the BAAQMD requirements.

Furthermore, the Proposed Action is expected to neither create nor measurably contribute to any local toxic air contaminant “hot spots,” as defined by the BAAQMD. “Hot spots,” pursuant to California Assembly Bill 2588, are regions, either small or large, where individual or cumulative levels of TACs exceed safety or significance risk thresholds. Annually, LBNL provides information to BAAQMD to help this agency determine the existence of any hot spots in the Bay Area. There are no identified hot spots in the area to which the Proposed Action would measurably contribute.

LBNL’s mandatory standards for all projects include those that would assure adequate shipping, treatment, storage and/or disposal of hazardous wastes, continuation of LBNL’s waste minimization programs, licensed hazardous waste haulers, implementation of employee communication and training requirements for hazardous wastes, and continued updating of LBNL’s emergency preparedness and response programs on an annual basis. Additional discussion is provided in Section 4.14. *Hazards and Human Health*, below.

The Proposed Action would not result in a significant impact to air quality.

5.1.8 NOISE

EXCAVATION, GRADING, AND CONSTRUCTION

To evaluate potential Proposed Action impacts on the nearest noise-sensitive uses, simultaneous noise measurements were taken on the project site and at three residences in the Panoramic Hill

¹¹ Current estimates indicate that concentrations of TAC emissions from the proposed project would be so low as to be immeasurable or extremely small at the nearest residential neighborhood fenceline. In fact, preliminary screening estimates indicate that the entire expected annual chemical inventory of the proposed Molecular Foundry would be so small that, were it to be emitted at a 100% annual rate (a physically impossible, conservative scenario), the vast majority of these chemicals would be unlikely to even approach BAAQMD regulatory thresholds at the LBNL fenceline.

Neighborhood. Construction noise would typically be generated by large, diesel-powered equipment. Since construction equipment was unavailable, a large commercial tree-limb grinder was used to generate noise at a suitable level. A noise meter was set up 50 feet from the grinder while simultaneous readings were taken at three locations in nearby neighborhoods. A summary of this data is presented in Table 4, below.

TABLE 4
FORECAST CONSTRUCTION NOISE MEASUREMENT DATA (decibels)

| Noise Level dB (Average of several measurements) | Project Site | 365 Panoramic Way | Project Site | 299 Panoramic Way | Project Site | 45 Canyon Road |
|--|-----------------|-------------------------|-----------------|-------------------------|-----------------|-------------------|
| Ambient | 54.1 | 45.0 | 54.7 | 45.8 | 51.5 | 47.0 |
| Engine Only | 82.3 | 45.8 | 85.0 | 50.6 | 85.9 | 50.4 |
| Grinding wood | 91.6 | 50.5 | N/A | N/A | N/A | N/A |

¹ Tests made during dry weather, wind approximately 3-5 mph from west, temp approximately 70 F.

² Sites on Panoramic Way are in City of Berkeley, the site on Canyon Road is in the City of Oakland.

³ "N/A" indicates that accurate measurements could not be obtained at these locations because wood grinding noises were highly variable during short periods of time.

The noisiest phases of construction could create noise at 89 dBA L_{eq} (50 feet). During field measurements, at the nearest residences, about 1,500 feet away, the measured noise levels diminished to about 50 dBA. The large amount of trees and shrubbery in the area between the homes and the project site help create favorable attenuation by absorbing, rather than reflecting, sound energy. These measured values are supported by calculated attenuation. Thus, predicted construction noise levels would not violate the Oakland Noise Ordinance or the City of Berkeley Noise Ordinance. The Proposed Action would therefore not significantly increase the daytime noise environment at nearby sensitive receptors.

OPERATIONS

The Proposed Action could generate noise from motor vehicle trips as well as from stationary sources such as Heating Ventilation Air Conditioning (HVAC) equipment. A change in noise level of less than three dBA is not discernible to the general population; an increase in average noise levels of three dBA is considered barely perceptible, while an increase of five dBA is considered readily perceptible to most people (Caltrans, 1998).

Traffic levels anticipated by the Proposed Action would not result in perceptible project-related noise.

HVAC equipment involves fans and compressors that are designed by the manufacturer to operate quietly and unobtrusively. Since LBNL would install and operate the HVAC equipment in compliance with manufacturer's standards, the noise impact to nearby residents and adjacent land uses would be less than significant.

Much of the equipment at LBNL is very sensitive to groundborne noise or vibration. There are no existing sources of groundborne noise or groundborne vibration at or around the site. The Proposed Action would not introduce any new sources of groundborne noise or vibration.

While the Proposed Action is consistent with the City of Oakland's General Plan Noise Element and Noise Ordinance, and is consistent with the City of Berkeley's Noise Ordinance, the additional measures that would be incorporated as part of the Proposed Action would assure that the Proposed Action would not expose sensitive receptors to excessive noise levels.

5.1.9 PUBLIC SERVICES

EXCAVATION, GRADING, AND CONSTRUCTION

The construction phase of the Proposed Action could affect response times to the project site and its vicinity as a result of any potential temporary construction-related roadway lane closures and detours. The Proposed Action would be supported by a collaborative, multidisciplinary team that would include engineers and project managers, as well as industrial hygiene, environmental protection, design and construction safety, ergonomics, fire protection, and radiation protection professionals from LBNL's EH&S Division. Construction activities would be overseen so as to comply with applicable safety requirements of Berkeley Lab, DOE, CAL/OSHA, and Federal OSHA. All appropriate fire, emergency medical, and police services would be consulted and apprised of every appropriate aspect of project design and construction.

OPERATIONS

The site is already within an area served by adequate fire and police protection services. The current level of staffing for fire protection services and the LBNL security force is adequate to support fire and police protection services for the Proposed Action.

5.1.10 PUBLIC UTILITIES

EXCAVATION, GRADING, AND CONSTRUCTION

Disposal of solid waste generated during construction would be the responsibility of the contractor. Due to the "cut and fill" nature of project grading, the Proposed Action would not create excavation spoils that would need to be hauled and disposed of off-site.

Utility hookups, pipes, and wiring would be accomplished as part of the construction of the Proposed Action. Construction-related impacts related to dust and construction equipment are discussed in the Air Quality and Noise sections of this analysis. Existing utility connections are

located in the vicinity of the project site, generally in existing right-of-ways. Some project connections may result in temporary construction-related delays to traffic along Lawrence and Lee Roads.

OPERATIONS

The Proposed Action is located adjacent to an urban area and is already served by utilities and service systems. It is not anticipated that additional needs created by the Proposed Action would be sufficient to necessitate construction of new or substantially expanded systems.

The existing distribution system would supply water for all laboratory uses and has sufficient capacity to meet the flow rate and duration requirements for both daily use and fire protection. Although the Proposed Action is expected to increase water use by less than approximately 1,500 gallons per day, it would not cause a significant impact because relatively unrestricted water volume is available from EBMUD. Peak water capacity for the Proposed Action would be 325 gallons per minute, although actual usage rates would be far lower.

Any increase at the large capacity wastewater treatment plant would represent an incremental increase to its existing load, and therefore would not be expected to cause a significant impact. The proposed Molecular Foundry would be expected to generate less than 1,200 gallons per day of wastewater, which would flow through new project sewer lines connected to existing sewer lines. Peak wastewater capacity of the building would be 185 gallons per minute, although actual usage rates would be far lower. This would be well within the wastewater volumes projected, mitigated for, and adopted in the 1992 LRDP EIR and 1997 Addendum to the LRDP EIR. It would also not contribute to a substantial LBNL-wide increase in wet weather flows, as LBNL has worked in recent years to substantially reduce its peak wet weather flows and has effectively addressed its previous infiltration/inflow problems.

As part of the proposed action, LBNL will continue to seek to integrate and find opportunities for controlling and/or reducing the amount of infiltration and inflow into the existing sanitary sewer system. Runoff from the project site would be diverted into a detention basin upstream of Strawberry Creek. An existing 12-inch storm drain that crosses the site would be re-routed to the lower access road. There would be some incremental increase of controlled flow from the detention basin into the creek due to an increase in impermeable surface area associated with the Proposed Action. The existing system provides for runoff intensities expected in a 25-year maximum-intensity storm.

Although operations of the new building would create additional waste in proportion to the number of employees stationed there, its volume is not anticipated to be great enough to significantly affect existing facilities. LBNL has a recycling program, which it continues to expand and update.

The Proposed Action would include an on-site 8,000-gsf Central Utility Plant that would house mechanical and electrical equipment to serve the main building. It would contain systems for heating, cooling, and purification of air and water to be used in the Molecular Foundry. In

addition, it would hold a stand-alone diesel-engine generator to provide a source of emergency power. All normal operating electrical power would be supplied by Pacific Gas and Electric Company through the Lab's existing infrastructure and the Grizzly Peak substation.

The Proposed Action would result in additional use of utility services. However, when compared to the overall use of utility services at LBNL, utility usage at the proposed Molecular Foundry would be a proportionally small increase.

5.1.11 ENERGY

EXCAVATION, GRADING, AND CONSTRUCTION

During the construction phase, electrical power would be provided to the construction site through temporary connections to the existing online distribution systems. Existing provisions of utilities, services, and energy at LBNL are expected to be adequate for temporary construction activities. Therefore, any impacts are expected to be less than significant.

OPERATIONS

Important components of meeting LBNL goals include a survey and study program to identify cost-effective energy savings measures; a retrofit program to implement the cost-effective projects; and a new buildings program which would ensure that new facilities meet all applicable energy performance standards, including both those developed by the Department of Energy Executive Order 12003 and 10 Code of Federal Regulations Part 436 and those issued by the State of California, Title 24. In addition, the specific building design of the Molecular Foundry would meet the requirements of 10 CFR 485, "Energy Conservation Voluntary Performance Standards for New Buildings."

Electricity and gas consumption for the proposed Molecular Foundry would be similar to the consumption patterns of Building 2. Gas consumption at Building 2 was 125,000 therms per year, while electricity consumption was 8,580 megawatt-hours per year. Peak load electrical capacity of the Proposed Molecular Foundry building would be approximately 2,900 kVA. Peak load natural gas capacity would be 10,700 CFH (cubic feet per hour), for space and water heating as well as laboratory usage. Actual usage rates would be far below the peak capacity, generally in the 30 percent-of-peak capacity range.

As previously noted, the Grizzly Peak electric substation was recently expanded to incorporate a new and adjacent substation, the Hill Area UC Substation. This new Hill Area substation allowed the UC Berkeley campus to draw its power from it, thus allowing the LBNL exclusive use of the Grizzly Peak substation. Therefore, electric capacity was expanded for both UC Berkeley and LBNL.

No mitigation measures would be required.

5.1.12 HAZARDS AND HUMAN HEALTH

EXCAVATION, GRADING, AND CONSTRUCTION

There is no history of hazardous materials processing, storage, or disposal on the project site. This is consistent with the findings of LBNL's 10-year site-wide environmental investigation activities at Berkeley Lab. A soil sampling and analysis of the Proposed Action site was carried out in January 2002. This investigation involved testing for volatile organic compounds, heavy metals, and radiological contaminants. The results of these analyses indicate that the proposed Molecular Foundry project site is free of chemicals of potential concern. In addition, environmental investigations at the Proposed Action site have not revealed the presence of contaminated soil or groundwater. Demolition of the existing surface parking lot and excavation of the site is therefore not anticipated to result in potential exposure to hazardous materials.

OPERATIONS

The Proposed Action is anticipated to be classified by the Department of Energy as a non-nuclear low-hazard facility. With the exception of the above ground diesel tank for the emergency generator, the Molecular Foundry facility would not include bulk storage (e.g., large quantities beyond what is reasonably needed for short-term use) of flammable or combustible liquids or gases, corrosive, caustic, or otherwise reactive or toxic chemical substances. The Proposed Action would comply with all LBNL hazardous materials policies and programs, in addition to compliance with the Department of Energy Program and Project Management Practices.

Chemicals used at the site would be used in very small amounts, and would therefore not create a hazard to the public. Chemical wastes would be contained and ultimately disposed in accordance with all applicable and appropriate storage, transport, and disposal requirements. Satellite accumulation areas would be used to properly store hazardous waste until transferred to the RCRA-permitted Hazardous Waste Handling Facility. Pursuant to the required project features listed in Appendix "A," the Proposed Action would track its safety and compliance performance in regard to hazardous materials; it would be required to confirm the appropriate licensing of any receiving facility for hazardous waste treatment, storage, or disposal; LBNL would continue its waste minimization programs to reduce the hazardous waste stream; and LBNL would confirm the appropriate licensing of any hazardous waste hauler serving the Proposed Action. Incorporation of these existing LBNL requirements into the Proposed Action would further reduce a less than significant impact.

Although the potential exposure to hazardous materials and hazards is already low, with the incorporation of the LRDP EIR, as amended, mitigation measures, any potential exposure to hazardous materials and hazards would be further reduced.

5.2 ANALYSIS OF ABNORMAL EVENTS AND ACCIDENT SCENARIOS

5.2.1 EXCAVATION, GRADING, AND CONSTRUCTION

Routine accidents and injuries (e.g., slips, trips, and falls) are common occurrences at construction sites and are not considered abnormal events. Nevertheless, worker safety issues are addressed in the “excavation, grading, and construction” discussions throughout this document and would be further minimized by implementation of applicable Federal, state, OSHA, and LBNL regulations and practices, including those identified in Appendix “A” of this document.

Abnormal accidents would include serious equipment malfunction, or major structural or land stability failures due to faulty engineering or construction practices. Again, these issues have been addressed and would not be reasonably foreseeable given the inclusion of various precautionary elements of the project description, including those identified in Appendix “A” of this document.

5.2.2 OPERATIONS

Routine accidents and illnesses (e.g., slips, trips, minor, small quantity chemical spills) are common occurrences in a laboratory environment and are not considered abnormal events. Nevertheless, worker safety and laboratory procedures are addressed in the “operations” discussions throughout this document and would be further minimized by implementation of applicable Federal, state, OSHA, and LBNL regulations and practices, including those identified in Appendix “A” of this document.

Earthquake and/or fire damage to buildings could endanger workers inside or in the vicinity of the Proposed Action structures. Earthquake and fire safety issues are addressed throughout the document and earthquake- and fire-resistant design is a key component of the on-going design of the Proposed Action. The proposed Molecular Foundry building would be constructed to allow safe egress of all occupants during a maximum credible seismic event and/or fire. Earthquake and/or fire damage to buildings could result in emissions of chemicals. However, complete collapse and/or fire inundation of the proposed Molecular Foundry building would not be likely given the Lab’s adherence to structural and fire safety codes, its maintenance of an on-site fire department, its on-going vegetation management plan that has significantly reduced wildfire fuel in the surrounding areas, and the soon-to-be-completed construction of a 200,000-gallon emergency water tank uphill from the site in the East Canyon area.

In addition, the proposed Molecular Foundry would not provide bulk storage for chemicals and chemical wastes. Safety cabinets and bracing would prevent the breaking and spillage of toxic and volatile chemicals. Fire, earthquake, and hazardous air emissions issues are addressed in the “operations” discussions throughout this document and would be further minimized by implementation of applicable Federal, state, OSHA, and LBNL regulations and practices, including those identified in Appendix “A” of this document. The proposed Molecular Foundry buildings would not store or use biological materials of high public concern, such as Biosafety level 3 or 4 materials and other biological materials not commonly used in other parts of LBNL.

5.3 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

5.3.1 NO ACTION

This alternative would adversely affect LBNL's ability to take advantage of funds available for nanoscience research under the National Nanotechnology Initiative, because there is no facility at LBNL that can provide adequate and consolidated space for the variety of disciplines necessary to make the required scientific breakthroughs in this area. There is also no space available for the sophisticated state-of-the-art research equipment for nanoscale research, which requires clean, utility-intensive modern laboratories. Finally, no space is available in close proximity to interrelated research support facilities, such as the NCEM and SSCL.

5.3.2 DIFFERENT BUILDING CONFIGURATION

This alternative would result in a facility that is nearly 70 percent smaller than the proposed building. The smaller building would be less noticeable and would therefore likely have less of a visual impact on the site. The high number of staff and the smaller building would, in combination, however, severely restrict the amount of research that could be conducted at the site, and would restrict the ability of LBNL to meet the goals and objectives of the NNI. (In order to meet the research needs of the building, it would be more densely occupied than the Proposed Action).

This alternative would likely have less of a visual impact on the surrounding natural and built environment than the Proposed Action, because of its reduced size. Net new vehicle trips generated under this alternative would be reduced by approximately one-third to one-half, and the distribution of those trips among the entry gates for LBNL would be correspondingly less than under the Proposed Action. The potential effects on traffic conditions also would be somewhat less than those of the Proposed Action. This alternative would likely have slightly less potential to disturb potential archaeological resources and would remove somewhat fewer trees. Project features identified in Appendix "A" would keep this at a less-than-significant level. Potential effects to biological resources would be slightly reduced but similar, as would noise impacts, air quality impacts, and public services and utilities impacts.

5.3.3 ALTERNATE BUILDING SITE (ON-SITE)

This alternative would require demolition of existing buildings, some of which have been preliminarily identified as historic resources. In addition, contaminated soil has been identified near Building 7, and demolition of older buildings would result in impacts to air quality as a result of probable asbestos and lead originally used in the construction of these buildings. Anticipated visual impacts from implementation of this alternative include impacts to the ALS building (Building 6), which is considered an important visual resource for the Lab. As construction and siting of the proposed building would likely obscure the ALS Building profile, a significant and unavoidable impact could occur under this alternative. Furthermore, National

Historic Preservation Act evaluation would be required of the historical significance of Buildings 4, 5, 7, 14, and 16.

Net new vehicle trips generated under this alternative, and the distribution of those trips among the entry gates of LBNL, would be the same as under the Proposed Action, and therefore, the potential effects on traffic conditions would be identical to the Proposed Action. Additional construction truck trips would be necessary to remove demolition debris and contaminated soil, if any, and to remove excavated soil that would not be used as fill in-place.

There would be no potential impacts to Alameda whipsnake habitat, as the project site is completely developed. This alternative would be consistent with the LRDP except for any potential visual quality effect it might have on the ALS building. Potential effects on noise and public services and utilities would be similar to the Proposed Action.